

**REMARKS**

The non-final Office Action mailed July 2, 2004, has been reviewed and carefully considered. Claims 1-26 are pending in the application. Claim 15 has been withdrawn from consideration. Claims 1-14 and 16-26 are rejected.

In paragraph two on page two of the Office Action, Claims 1-5, 7, 14, 16-18, and 20 were rejected under § 103(a) over Schultz et al. (U.S. Patent No. 6,058,489) in view of Ofer et al. (U.S. Patent No. 5,887,199).

In paragraph five on page seven of the Office Action, Claims 6, 8, 19, and 21 were rejected under § 103(a) over Schultz in view of Ofer as applied to Claims 3, 2, 16 and 15 above, and further in view of Stallmo et al. (U.S. Patent No. 5,875,456).

Applicants respectfully traverse the 35 U.S.C. § 103(a) rejections.

Applicants' application first requires at least "adding at least one drive having a format of a second type to a system controller controlling a predetermined number of storage devices having a format of a first type arranged in a digital array of storage devices to form a system drive."

Schultz fails to disclose at least adding at least one drive having a format of a second type to a system controller controlling a predetermined number of storage devices having a format of a first type. Schultz suggests adding a drive to a storage system for expanding the disk array. However, Schultz is silent as to whether the new drive's formatting. Rather, the formatting of the new drive appears to need to be the same because Schultz fails to discuss conversion or reformatting of data.

The Office Action cites Ofer as teaching the conversion of data (this issue will be discussed below). However, Ofer, like Schultz fails to suggest adding at least one drive having a format of a second type to a system controller controlling a predetermined number of storage devices having a format of a first type. Rather, Ofer focuses on providing a controller that can convert data from any host to store on a given type of disk drive. To provide the greatest flexibility, Ofer requires a 520 bytes per block type of drive so that multiple host blocks and pads of blank bits may be configured for the 520 bytes per block drive. If a 520 bytes per block drive

is not used, then Ofer indicates that a host that uses 520 bytes per block, i.e., AS/400, is not allowed to be used.

Thus, Schultz and Ofer, alone or in combination, fail to disclose, teach or suggest at least “adding at least one drive having a format of a second type to a system controller controlling a predetermined number of storage devices having a format of a first type arranged in a digital array of storage devices to form a system drive.”

Applicants’ application further requires at least “converting data from a storage device having the first format type on the digital array of storage devices to a format of a second type.” The Office Action admits that Schultz fails to suggest converting data from a storage device having the first format type on the digital array of storage devices to a format of a second type. However, Ofer fails to remedy the deficiencies of Schultz.

Ofer provides a the disk controller converts data from a host to a format consistent with a type of drive forming the disk array and then formats data received from the drive to the format required of the host requesting the data. Ofer fails to suggest “converting data from a storage device having the first format type on the digital array of storage devices to a format of a second type.” Nowhere does Ofer suggest data from one drive is converted to a format of a different drive. Rather, Ofer converts data received from a host to a format used by the drives so that multiple host blocks and pads of blank bits may be written to the drive. Ofer thus requires identification of the nature of the input system. Information received by the controller from the input system does not originate from the devices to which the controller is attached. Thus, Ofer clearly fails to suggest converting data from a storage device having the first format type on the digital array of storage devices to a format of a second type.

Accordingly, Schultz and Ofer, alone or in combination, fail to disclose, teach or suggest at least converting data from a storage device having the first format type on the digital array of storage devices to a format of a second type.

Applicants’ application also requires at least “migrating the converted data in the format of the second type onto the added at least one drive having a format of the second type.” The Office Action states that Schultz discloses the rearrangement of stripes of data when adding a drive. However, Schultz fails to suggest migrating converted data.

Ofer fails to remedy this deficiency of Schultz. Ofer does not discuss the disk controller transferring data between devices to which the controller is attached. Rather, Ofer merely writes data to a drive using a conversion process that writes multiple host blocks and pads of blank bits, if needed, to the drive. Thus, Ofer fails to suggest "migrating the converted data in the format of the second type onto the added at least one drive having a format of the second type."

Accordingly, Schultz and Ofer, alone or in combination, fail to disclose, teach or suggest at least migrating the converted data in the format of the second type onto the added at least one drive having a format of the second type.

Moreover, Applicants respectfully submit that the Office Action's motivation for combining Ofer with Schultz is improper. The Office Action merely cites Ofer as disclosing "the benefits of maintaining a disk array where the disks have different formats as having flexibility and adaptability in column 1 lines 8-15. The Office Action then states that because Schultz discloses the rearrangement of stripes of data when adding a drive in Figure 2A-F, the conversion between formats would be required during this operation when the added disk would be of a different format. However, neither Ofer nor Schultz provide such a teaching. The Office Action is using the claims of Applicants invention for this concept and thus relies upon impermissible hindsight for the alleged motivation.

The Office Action also fails to provide evidence of motivation to combine the Ofer reference with the Schultz reference. Rather, the Office Action merely states that Ofer discloses benefits of maintaining a disk array having different formats and that Schultz rearranges stripes of data when expanding the RAID system. According to MPEP § 2143.01 "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." The stated characteristics of Ofer and Schultz in the Office Action do not direct Applicants to evidence in the cited references that would show a motivation to combine. Therefore the § 103(a) rejection is conclusory and Applicants respectfully request withdrawal of the rejection.

Furthermore, according to MPEP § 2143.01 "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." The Office Action states at page 9, "[t]he combination of the two inventions (i.e.

replacing Schultz's SCSI controllers (figure 1 element 112A-E) with Ofer's storage controller (figure 1 element 12)) results in applicants' invention as claimed." The SCSI controller in Schultz enables system-level interfacing between a computer and a variety of intelligent devices. Replacing the SCSI controller with Ofer's storage controller would limit the operation of Schultz's online disk array reconfiguration to logical volumes rather than to a variety of intelligent devices such as scanners, printers, CD-ROMs, etc. Therefore the combination of Schultz and Ofer change the principle of operation of Schultz and the § 103(a) rejection is improper. Applicants request withdrawal of the § 103(a) rejection.

Furthermore, this alleged motivation is improper because it merely states what a storage controller might be used for. There is no evidence provided to suggest that a storage controller may be used to *replace* a SCSI controller, nor is there any evidence provided to suggest why a SCSI controller might be *replaced*. Therefore, the alleged motivation is conclusory and based on hindsight.

Stallmo fails to remedy the deficiencies of Schultz and Ofer. Stallmo merely discloses a system that uses various methods for striping and organizing data across the array when disks are added or removed. However, configuration of the system requires only that the host/customer/system administrator provide a level of configuration that defines the target addresses (such as SCSI IDs/Logical Unit Numbers) to which the disk array must respond, the capacity of the defined target addresses, and whether the data at each target address is to be protected against the loss of a disk. Thus, Stallmo is silent regarding the limitations recited in the independent claims.

In fact, Stallmo teaches away from the present invention because Stallmo requires dividing data blocks on a plurality of storage devices into a plurality of square portions, wherein a square portion comprises a number of stripes equal to a quantity of said plurality of storage devices and exchanging data in sets of these blocks.

Accordingly, Schultz et al., Ofer et al. and Stallmo et al. alone or in combination, fail to disclose, teach or suggest all of the limitations of Applicants' application. Thus the § 103(a) rejections are improper. Thus, Applicants request that the Section 103 rejections be withdrawn.

Dependent claims 2-13 and 16-26 are also patentable over the references, because they incorporate all of the limitations of the corresponding independent claims 1 and 14. Further

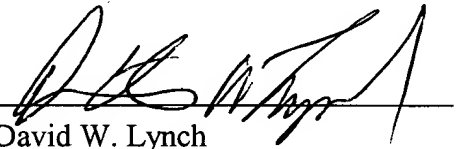
dependent claims 2-13 and 16-26 recite additional novel elements and limitations. Applicants reserve the right to argue independently the patentability of these additional novel aspects. Therefore, Applicants respectfully submit that dependent claims 2-13 and 16-26 are patentable over the cited references, and request that the objections to the independent claims be withdrawn.

On the basis of the above amendments and remarks, it is respectfully submitted that the claims are in immediate condition for allowance. Accordingly, reconsideration of this application and its allowance are requested.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Attorney for Applicants, David W. Lynch, at 651-686-6633 Ext. 116.

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